UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/007,003	11/09/2001	Sujal M. Patel	ISIL.001A	9714

20995	7590	03/24/2005

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ART UNIT	PAPER NUMBER
2161	

DATE MAILED: 03/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/007,003	PATEL ET AL.
	Examiner	Art Unit	
	Susan Y Chen	2161	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>20 December 2004</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20 and 43-58* is/are pending in the application.

    4a) Of the above claim(s) *13-20 and 44-58* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12 and 43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date <u>1/18/2005</u>.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

Response to Amendment

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/20/2004 has been entered.

This Action is responsive to the amendment filed on 12/20/2004, in which claims 1-20 and 43-58 are pending for examination. Claims 1-20, 43, 46-47, 49 and 53-58 have been amended.

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I.   Claims 1-12 and 43, drawn to distributed data processing, classified in class 707, subclass 10.

II.   Claims 13-20 and 44-46, drawn to virtual file system for storing data, classified in class 709, subclass 213.

III.   Claims 47-53, drawn to accessing dynamic storage device, classified in

        class 711, subclass 111.

IV.   Claims 54-58, drawn to storage data archiving control, classified in class

        711, subclass 161.

The inventions 1, II, III and IV are related as sub-combinations disclosed as usable together in a single combination. The sub-combinations are distinct from each other if they are shown to be separately usable.

In the instant case, invention I (distributed data processing) has separate utility such as distribute data among storage devices via metadata. Invention II (virtual file system for storing data) has separate utility such as storing data via virtual file system. Invention III (accessing dynamic storage device) has separate utility such as access data of multiple storage devices via dynamically selecting modules. Invention IV (storage data archiving control) has separate utility such as control archiving based on the selection of a first module and identifiers.

Because these inventions are distinct and search groups I, II, III and IV are not required to be simultaneous that renders a serious searching workload on the examiner, as such, the restriction for examination purposes as indicated is proper.

A telephone interview has been conducted by the examiner (Susan Chen) and applicant's attorney (Amy Chen) on 03/15/2005. The examiner has requested applicant representative to make an election of the above recited groups, in reply, the applicant selected group 1 (claims 1-12 and 43) for continuing examination without traverse.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-12 and 43 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claim 1, it is unclear what the claimed "a first program module" and "a second program module" referred to [i.e., the instant specification discloses at least the following modules: 1) Block Allocation Manager Module, 2) Block Cache Module, 3) Local Block Manager Module, and 4) Remote Block Manager Module, which one is the claimed first and second module? How to associate the claimed first, second modules with the respectively claimed functions? What are the links between the claimed first, second modules, file metadata, and error correction data? How can the claimed first programs dynamically select the claimed at least four storage modules for storing the

claimed first error correction data or update the metadata on which the claimed first file

portion, second file portion and the first error correction data are stored?].

As to claim 2, it is unclear what the claimed third program module referred to?

Furthermore, this claim is depend on claim 1 that discloses a dynamic selection and

storing steps, however, the instant claim recited the use of the claimed third program

module configured to instruct the set of storage modules to store the first file portion on

the first storage module, the second file portion on the second storage module, the

metadata on the third storage module and the first error correction data on the fourth

storage module in a static way without any purpose or reason specified in the

disclosure, thus it renders the claim as indistinct.

As to claim 4, it is not understood what is meant by "the metadata further

indicates the location information" [i.e., what is the claimed location information for?]

As to claim 6, it is unclear what the association of the claimed " a fifth storage

module" and first program module is [i.e., How the first program refers to the fifth

storage module from the set of storage modules to store a copy of the first file portion in

it?]

As to claim 7, what is the link between the claimed "a third program module" and

"a third program module" as recited in claim 3 [i.e., are they refer to the same module?

Or different modules?]

As to claims 3, 5, 6, 8-12 and 43, these claims have the same defects as their

base claim, hence are rejected for the same reason.

Because of the ambiguous nature of the claims, the following art rejection is to

the best as the examiner is able to ascertain.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 5-10 and 43, are rejected under 35 U.S.C. 102(b) as being

anticipated by Belsan et al. (U.S. Patent No. 5,403,639).

As to claim 1, Belsan et al. (hereinafter referred as Belsan) discloses a

distributed file system [e.g., Abstract, Fig. 1 and associated texts], comprising:

A plurality of storage modules [e.g., the set of storage units: 11-1 – 11-N, Fig. 1] in communication with each other and configured to store and manage metadata [e.g., the metadata files of the storage units 11-1 – 11-N, Fig. 1] about files / directories of the system [e.g., col. 5, lines 2-11], wherein, the data of the at lest one of the files stored on the distributed file system span over a plurality of storage modules of the intelligent storage devices, and the first file portion is different from the second file portion [e.g., col. 3, lines 16-19; col. 9, lines 36 – col. 10, line 11].

A first program module stored in the distributed file system and in communication with the set of storage modules configure to dynamically select from the plurality of modules to store the set of file portions on various storage devious modules [e.g., the file server utility software coupled to the user program 3 to dynamically identify the physical location of the different storage modules for storing data via pointers, col. 4, lines 30 – col. 5, line 54; Fig. 19 and associated texts] base on the available capacity [e.g., the step 2007, Fig. 20 and associated texts];

A second program module stored in the distributed file system and in communication with the set of storage modules configure to dynamically update the metadata associated with the various file portion and error correction data [e.g., the function software of the processor 204-0, col. 11, lines 36-49].

As to claim 2, except the features recited in claim 1, Belsan further discloses that the distributed file system having a third program module stored and configured to instruct the set of storage module to stored the various file portions, metadata, and error

correction data on various storage module [e.g., the cache management software, col.

21, lines 18-21; col. 23, lines 19-54].

As to claim 5, except the features as recited in claim 1, Belsan further discloses

that the file system is configured to change error correction redundancy parameters of a

directory when the directory corresponding metadata is updated [e.g., see the steps

624, 625 of Fig. 6; 1005 -1020, Fig. 10; 709-713, Fig. 13; 1504-1506, Fig. 15].

As to claims 6 and 8, except the features recited in claim 5, Belsan further

discloses that the file system is configured to copy and replicate data in real-time

throughout a subset of the plurality of intelligent storage devices and store the locations

of the copied directory data in the corresponding metadata [e.g., see col. 3, lines 11-36;

the Snapshot Copy Operation Using Copy Table at col. 21-22].

As to claim 7, except the features recited in claim 1, Belsan further discloses that

the system is configured to move data in real-time, wherein the location of the moved

data is stored with the associated metadata [e.g., see col. 22, lines 23-47].

As to claims 9-10, except the features recited in claim 8, Belsan further discloses

that the system is configured to replicate data in response to a high volume of requests

and high utilization of the storage hardware [e.g. see the Staging and De-staging

processing at col. 24 – col. 26 & Fig. 18].

As to claim 43, the claimed feature the file has been stored on a number of

storage modules, wherein the number is equal to or grater than two is an intended use

of distributing file processing.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3-4, are rejected under 35 U.S.C. 103(a) as being unpatentable over

Belsan et al. (U.S. Patent No. 5,403,639) in view of Beardsley et al. (U.S. Patent No.

6,502,174).

As to claims 3-4, Belsan discloses all of the features recited in claims 1 and 2,

however, Belsan fails to expressly disclose the redundancy information including parity

data stored with corresponding metadata in form of block location.

However, Beardsley disclosed a storage management system having the

redundancy information includes claimed parity information in form of data block

address as claimed by applicant [col. 4, lines 58 – col. 5, line 27; Fig. 2 and associated

texts].

Belsan and Beardsley are common in the field to manage storage data via

common metadata structure, therefore, with both Beardsley and Beardsley teachings in

front of him/her, it would have been obvious for an ordinary skilled person in the art at

the time the invention was made to be motivated to modify Belsan's system with the

metadata structure taught by Beardsley, because by doing so, the combined system

would be able to apply the segmented parity information stored in the metadata

structure to perform associated storage segment validation or error checking, therefore,

result in a faster storage block data recovery in case of system malfunction.

Claim Rejections - 35 USC § 103 (Continue)

Claims 11-12, are rejected under 35 U.S.C. 103(a) as being unpatentable over

the system of Belsan as applied to claim 1 above, and further in view of Mason, Jr.

(U.S. Patent No. 5,884, 098).

As to claims 11 -12, the system of Belsan did not expressively disclosed the

claimed read/write features cited by applicant. However, Mason Jr. (thereinafter referred

as Mason) teaches that the claimed features are the general options of the popular

storage technology RAID Level 5 processing [e.g. see col. 8, lines 29-32]. Belsan and

Mason are in the same field to process input/out data via intelligent storage units. As

such, it would have been obvious to one of ordinary skilled person in the art at the time

the invention was made, to adapt the very popular RAID processing into Belsan's

system, because by applying the existing technique of RAID level 5 processing as

taught by Mason into the system of Belsan, the system would provide a handy read-

modify-write operations for storage data block I/O processing.

Response to Arguments

Applicant's arguments with respect to claims 1-20 and 43-58, have been

considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Susan Y Chen whose telephone number is 571-272-

4016. The examiner can normally be reached on Monday - Friday from 7:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Safet Metjahic can be reached on 571-272-4023. The fax phone number for

the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Susan Y Chen
Examiner
Art Unit 2161

March 15, 2005

UYEN LE
PRIMARY EXAMINER